Music Industry Protecting Audio CDs

intentionally introducing errors to prevent copying

By Harry Baggen

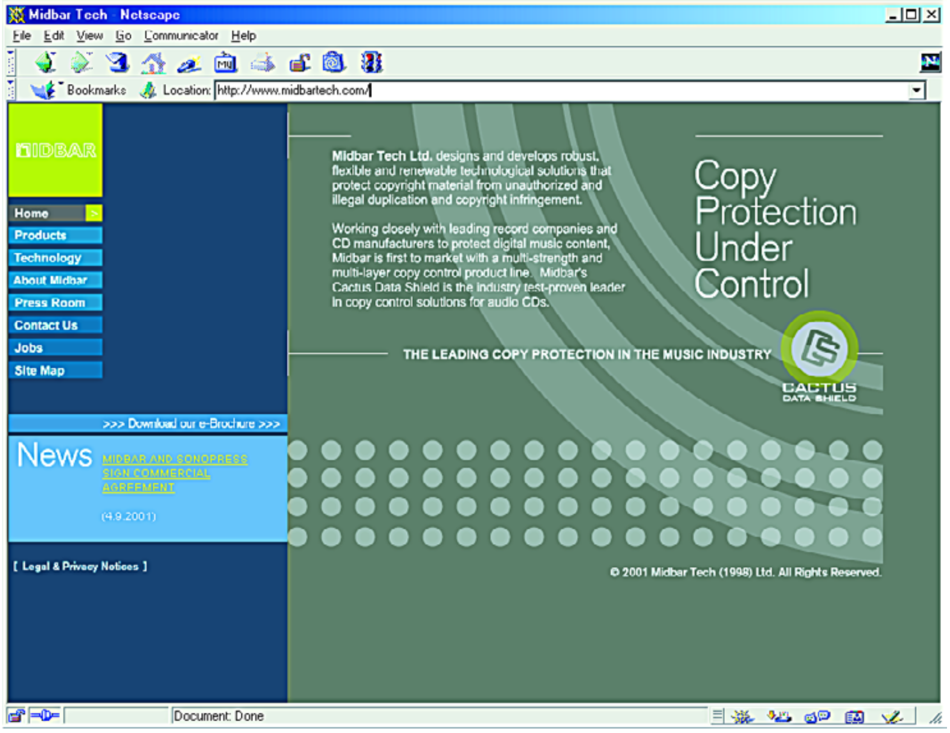
The illegal copying of audio CDs costs the music industry a bundle every year. A number of companies are now using sophisticated techniques to try to protect their CDs against copying. However, it's questionable whether this actually helps and whether the consumer actually benefits.

Play it Loud. Play it Legal.
Peer-to-peer Piracy and Consumer-based Piracy are leading to rampant, illegal file-distribution causing the entire music industry world-wide to experience escalated losses, eclipsed revenue projection, lost ownership, sacrificed integrity and in the end, a weakened bond between artists, fans and the industry. During 2000, the IFPI reports, pirate sales of CDs and CD-R music discs rose to an estimated 640 million units,

For years, the music industry has been complaining about heavy losses from the illegal copying of audio CDs. Most computer owners these days have a CD burner in their system, and with modern, fast CD recorders it only takes a few minutes to make a copy of a CD for a friend or neighbour. Naturally, this is not how it's supposed to be. Not only does the producer / distributor loose income, but the songwriters and musicians who have done their best to put something nice on the CD also lose out. According to the law, you can make a copy of a phonograph record or CD for your own use, but you're not supposed to buy a CD and then make ten copies (or let someone else make ten copies) for all your friends.

In order to put an end to home copying, various attempts have been made to devise methods to protect audio CDs against digital copying on a computer. Several companies have now come up with a number of different systems, and naturally they all insist that their methods work perfectly. Various large music producers also use these methods, but often without making known which CDs are affected.

The inventors of the various protection methods are naturally reluctant to provide very much information about the techniques used, but all of them essentially amount to modifying the data on the CD to such a degree that a PC can no longer make an exact copy of the CD using a CD-ROM drive. The best-known technique is that used by Macrovision. In their 'Safe Audio' system, the audio data and error correction codes on the CD are intentionally mutilated to the point that a CD-ROM drive in a computer will have trouble handling the data. As a result, a file that is read in digitally will produce all sorts of noise and


Midbar Tech - Netscape
File Edit View Go Communicator Help
Bookmarks Location: http://www.midbartech.com/
MIDBAR
Home
Products
Technology
About Midbar
Press Room
Contact Us
Jobs
Site Map
>>> Download our e-Brochure >>>
News
[Legal & Privacy Notices]
Copy Protection Under Control
CACTUS DATA SHIELD
Document: Done

Midbar Tech Ltd. designs and develops robust, flexible and renewable technological solutions that protect copyright material from unauthorized and illegal duplication and copyright infringement.

Working closely with leading record companies and CD manufacturers to protect digital music content, Midbar is first to market with a multi-strength and multi-layer copy control product line. Midbar's Cactus Data Shield is the industry test-proven leader in copy control solutions for audio CDs.

THE LEADING COPY PROTECTION IN THE MUSIC INDUSTRY

MIDBAR AND SONOPRESS SIGN COMMERCIAL AGREEMENT

(4.9.2001)

© 2001 Midbar Tech (1998) Ltd. All Rights Reserved.

interference on playback, so that it is no longer worthwhile to copy it to a CD-R. Normal audio CD players prove to have no problems with such data, since even though the error correction system in such a player gets hopelessly confused by the bogus data, the player 'invents' intermediate values by means of interpolation.

We do not find such methods particularly attractive. First the industry does its best to devise a CD standard that provides the purest possible reproduction quality and a high degree of error tolerance (to compensate for scratches and the like), only to turn around and intentionally introduce gross errors.

Protests against this method are becoming slowly but steadily stronger and more numerous, particularly on the part of audiophiles, who fear that the protection techniques may have a negative effect on sound quality – and we must say that we agree! Among others, the well-known British hi-fi expert Martin Colloms is absolutely opposed to such methods. He compares them to splashing paint all over pictures in art galleries to prevent them from being stolen. You can find more on the subject in articles in *New Scientist* [1] and *New Media Music* [2]. In the US, a complaint has already been lodged against a music company that put protected CDs on the market without a clear notice on the packaging.

Which companies are involved in protecting CDs? The best known and largest is the already-mentioned Macrovision [3], known among other things for the video protection system with the same name.

Macrovision's 'Safe Audio' technique was originally developed by the Israeli company TTR Technologies. Macrovision claim that they carried out listening tests for several months using both lay persons and people with 'golden ears', with the result that no-one was able to detect any changes in the music signal resulting from the copy protection. However, they are not willing to identify the CDs to which this technique has been applied, although there are apparently a number of well-known titles that have been produced in large volumes and the number of complaints (according to Macrovision) is minimal.

Sony, which in addition to making consumer products is also one of the major players in the audio industry and a maker of CDs (Sony DAC C), use a technique of their own called Key2Audio [4]. They claim that this process does not corrupt the music data, but that instead a sort of digital fingerprint is added when the glass master for the CD is made, with the result that digital copying is no longer possible.

Cactus Data Shield is a technique developed by Midbar [5] that is presently widely used. Apparently, at least one million CDs have already been protected using this system. Not much is known about this system.

The MediaCloQ technique from SunnComm [6] uses yet another method. A CD that has been protected using this method can be recognised by a clearly different reflection from the region at the end of the audio track on the CD.

The website of CD Media World [7] provides a good summary of all current protection systems, with a brief explanation of each system.

With all this fuss about copy protection for audio CDs, you might almost forget that it is still perfectly easy to make a copy of a CD by just using the normal audio output. The primary disadvantage of this is that it takes so much time, and in addition there is a fractional loss of sound quality due to the extra D/A and A/D conversions. The question is whether the average consumer is really concerned – after all, most consumers are happy with the distinctly lower audio quality of MP3 files downloaded from the Internet.

(025005-1)

Internet addresses:

[1] NewScientist:
www.newscientist.com/news/news.jsp?id=ns9999998

[2] New Media Music:
www.newmediamusic.com/articles/NM01080292.html
www.newmediamusic.com/articles/NM01100072.html

[3] Macrovision SafeAudio:
www.macrovision.com/solutions/newtech/safeaudio.php3

[4] Sony DADC Key2Audio:
www.key2audio.com/key2audio/index.htm

[5] Midbar Cactus Data Shield
www.midbartech.com/cactus2.html

[6] SunnComm MediaCloq:
www.sunncomm.com/

[7] CD Media World:
www.cdmediaworld.com/hardware/cdrom/cd_protections.shtml